

REMARKS

The application has been amended and is believed to be in condition for allowance.

Claims 1-20 were examined.

Claim 1 is amended. Claims 7 and 20 are cancelled. Claims 21-22 are based on claims 1 and 7 and are new.

Please amend the title to "FRYING HOB ARRANGEMENT WITH INDUCTION HEATING".

The Official Action objected to the Abstract. However, it appears that the Official Action was not referring to the new Abstract provided in the Preliminary Amendment. This Abstract is believed to be proper and is as follows:

A frying hob arrangement includes a planar heating element (5) including a ferromagnetic material and constituting a frying surface. The arrangement includes at least two magnetic field generators (1, 2) each having two free ends, wherein the heating element is arranged in or close to a plane defined by the free ends. The magnetic field generators are controlled by a controller such that they are adapted to generate alternating magnetic fields in the planar heating element, wherein the magnetic fields are converted into heat in the heating element. The magnetic fields being such that the magnetic field through one of the free ends has an opposed direction as compared to the magnetic fields through the other free ends.

Withdrawal of the objection to the Abstract is therefore solicited.

Applicant appreciates that it was noted that the Office's BIB datasheet had an error and was corrected.

Claim 15 has been amended responsive to the noted informality.

Claims 1-20 were rejected as obvious over IGUCHI 5,053,593 or GIBBS GB 1,157,711 in view of SEGUY et al. 4,792,652 or MCGAFFIGAN et al. 5,376,774.

Claim 12 was rejected in further view of DICKENS 5,134,265.

IGUCHI and GIBBS are each offered as disclosing the recited invention less the feature of the magnetic fields being such that the magnetic field through one of the free ends has an opposed direction as compared to the magnetic fields through the other free ends. SEGUY and MCGAFFIGAN are each offered for this feature.

The Official Action indicates that it would be obvious to modify either of IGUCHI and GIBBS in view of either of SEGUY and MCGAFFIGAN to control the power to the induction heating coils for a safer device with less interferences to other appliances.

Applicant respectfully disagrees.

A low-frequency electromagnetic induction heater is disclosed in IGUCHI that includes a plurality of leg iron cores,

a corresponding yoke iron core arranged on the leg iron cores, an induction coil wound around each leg iron core, and an iron plate or metal vessel for producing heat with which the leg iron cores or induction coils are substantially in direct contact.

The primary object with this induction heater is that it produces less noise than other such heaters. In the Figures 1 and 5 are illustrated six leg iron cores provided with coils. Each coil is connected to another substantially opposed coil in the circular and symmetrical configuration of the coils, so that the current flows from one coil to the opposing coil. It is necessary that all induction coils have the same direction of rotation.

The current applied to the coils is a three phase alternating current (see e.g. col. 4, line 40 - col. 5, line 5). The magnetic flux generated inside the iron cores passes through the heating element (iron plate) and finally flows to reach the opposing iron cores.

Thus, in the heater disclosed in IGUCHI six cores with coils form three core/coil pairs wherein each pair forms a closed magnetic flux loop.

As acknowledged by the Official Action, IGUCHI does not include the magnetic fields being such that the magnetic field through one of said free ends has an opposed direction as compared to the magnetic fields through the other free ends.

GIBBS is also acknowledged to miss this feature of the invention. Applicant submits that it would not be obvious to modify either of IGUCHI or GIBBS to include this feature.

In the following it is explained how the advantageous even heating is accomplished by the frying hob arrangement according to the present invention.

In the invention each magnetic module comprises two magnetic field generators and each magnetic field generator has two free ends (or poles), i.e. each magnetic module has four poles.

When feeding a magnetic module as described, e.g. in connection with Figure 5, the coil of one leg of a magnetic field generator is fed by a reversed polarity as compared to the feeding of the other three coils of the magnetic module. During each half period it is achieved three poles (e.g. North) having a magnetic field directed in the same direction and the fourth pole (South) having an opposite directed magnetic field. During the next half period the situation is the opposite, i.e. three S-poles and one N-pole.

This is now recited in claim 1. This configuration is non-obvious over the applied references in that there is no motivation to so modify either of IGUCHI and GIBBS.

There is no teaching in the prior art that the magnetic field of the single pole attracts one of the magnetic fields from one of the other three poles and as a result two remaining (left-

over) magnetic fields having the same polarity are obtained. The prior art does not teach that these two remaining magnetic fields counteract which results in that the magnetic fields are spread in the material to be heated, e.g. the ferromagnetic sheet. This in turn results in the even heating of the sheet. The rapid spreading of the two remaining magnetic fields is related to that these fields are forced away from areas where the magnetic field between the established N- and S-pole exists.

Of course, which of the three magnetic fields having the same direction that will attract the fourth opposite directed magnetic field depends on the distance between the free ends in such a way that the field is established between the free ends having the shortest distance between each other.

This arrangement provides a more even heating. None of the references make this teaching and therefore one cannot say that the invention, as now recited, is obvious. Therefore, claim 1 is believed non-obvious. The dependent claims need not be further discussed as they are allowable at least for depending from an allowable claim.

The new claims recite the magnetic module having four coils and four poles and being connected to an alternating current power source with i) a first current connection (F1) connected to a first free end (f1) of the four coils and ii) a second current connection (F2) connected to a second free end (f2) of the four coils (see Figure 5).

Also recited is that the four coils are arranged such that a first coil is fed by a reversed polarity as compared to feeding the other three coils so that with each half period, the three poles of the other three coils have a magnetic field directed in the same first direction and the pole of the first coil has a magnetic field directed in an opposite second direction (see e.g., Figures 6-7).

As discussed above, this configuration is neither taught nor suggested by the prior art. Therefore, the new claims are also believed patentable.

Reconsideration and allowance of all the claims are therefore solicited.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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